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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/868,695	09/26/2001	Eren Tolga Rosenfeld	0522200171	3233

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BANNER & WITCOFF, LTD.
ATTORNEYS FOR CLIENT NO. 005222
10 S. WACKER DRIVE, 30TH FLOOR
CHICAGO, IL 60606

EXAMINER	
BUSS, BENJAMIN J	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	09/868,695	ROSENFELD ET AL.	
	Examiner	Art Unit	
	BENJAMIN BUSS	2129	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 March 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *20 February 2007* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This Office Action is in response to an AMENDMENT entered 3/19/2008 for the patent application 09/868,695 filed on 9/26/2001 as a 371 of PCT/US99/02737 filed on 2/8/1999, which is a continuation of application 09/218,945 filed **12/22/1998**. The previous Office Actions of 12/20/2007, 10/3/2007, 4/17/2007, 7/31/2006, 2/28/2006, 7/8/2005, 1/19/2005, 7/22/2004, and 2/2/2004 are fully incorporated into this Office Action by reference. Claims 1-18 are pending.

Specification

Response to Arguments

Applicant's arguments, see page 6, filed 3/19/2008, with respect to the objection to the specification have been fully considered and are persuasive. Examiner agrees to interpret the "computer-readable medium" recited in the claims as supported by the recitation of "Random Access Memory (RAM)" and/or "Read Only Memory (ROM)" and/or "disk storage units" on page 3 lines 1-15 of the specification in reference to Figure 1. The objection to the specification has been withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the Office presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the Office to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-2, 4-11 & 13-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over ***Purcell*** (USPN 5,727,161), ***Goleh*** (USPN 5,372,507), ***Cook*** (USPN 5,727,950), ***Mehlenbacher*** ("Software Usability: Choosing Appropriate Methods for Evaluating Online Systems and Documentation"), ***Tripp*** ("Rapid Prototyping: An Alternative Instructional Design

Strategy"), ***Fairley*** ("Software Engineering Concepts"), and ***Turner*** ("A Case Study Using Scenario-Based Design Tools and Techniques in the Formative Evaluation Stage of Instructional Design: Prototype Evaluation and Redesign of a Web-Enhanced Course Interface").

Claims 1 and 10:

Purcell teaches:

- (a) receiving information indicative of a goal (C1-45, especially "`electronic spreadsheets are well-known and powerful planning and management tools. Spreadsheets organize and present financial or accounting information`" C1 L29-40; Also see Figs. 7, 15, 19, 22-23, 34, 42-43, & 46-47)
- (b) integrating information that motivates accomplishment of the goal in a presentation (C1-45 especially "`The software further…the input data`" C3 L12-22)
- (c) managing information flow utilizing a table of components (C1-45 especially "`Each spreadsheet page…numbers of cells`" C11 L55-65), the components comprising:
    - a domain component providing services for modeling a state of the simulation (C1-45 especially i.e. "`plan-model`" C3L10-45 or "`plan-model being changeable into any of a number of what-if states`" Claim 1 or "`the sentence changes to state the information represented by the moved-to position`" C35L55-C36L5; *The person of ordinary skill in the art at the time the invention was made would have understood that this requires monitoring the state of the graph point in order to use programming logic/rules to evaluate the state in order to determine the appropriate information to display to the user*);
    - a profiling component providing a rule-based evaluation of the state of the simulation (C1-45 especially i.e. "`graphic analysis`" C3L10-45 or "`choosing … functional relationship … plan-model`" Claim 1 or "`the sentence changes to state the information represented by the moved-to position`" C35L55-C36L5; *The person of ordinary skill in the art at the time the invention was made would have understood that this requires monitoring the state of the graph point in order to use programming logic/rules to evaluate the state in order to determine the appropriate information to display to the user*);

- a remediation component providing services for a rule-based delivery of feedback to the student, wherein the feedback is based on profiling information from the profiling component (C1-45 especially i.e. "each of the invention's graphic analyses represents development and delivery of a vast amount of planning and decision-making information and value in concise visual format" C33L5-30 or "providing a first graph … display said first graph" Claim 1 or "the sentence changes to state the information represented by the moved-to position" C35L55-C36L5; *The person of ordinary skill in the art at the time the invention was made would have understood that this requires monitoring the state of the graph point in order to use programming logic/rules to evaluate the state in order to determine the appropriate information to display to the user*).

Purcell fails to explicitly teach:

- (a) the goal being associated with a training objective of a student, the training objective corresponding to mirroring an actual work environment of the student;
- (c) providing a simulation of the actual work environment during the presentation, wherein each component encapsulates a behavior and data necessary to support a related set of services through a published interface, each said component supporting activities in a plurality of development phases of the simulation that include a test phase,
  - a transformation component providing services for manipulating the state of the simulation, wherein the transformation component performs at least one calculation on the domain and provides a result back to the domain for further analysis by the profiling component;
  - the test phase including functional testing, usability testing, and cognition testing, the test phase being performed to test that the simulation:
    - functions properly as performed by the functional testing;
    - enables the student to navigate effectively as performed by the usability test; and
    - meets learning objectives as performed by the cognition testing; and
- (d) evaluating progress toward the goal and providing feedback that further motivates accomplishment of the goal.

Goleh teaches:

- (a) the goal being associated with a training objective of a student, the training objective corresponding to mirroring an actual work environment of the student (C1-14 especially "The present invention initially … mastering the subject and engaging it professionally." C3 L24-45; Also "A method for teaching the practical application of a subject. The student is furnished … a simulated life-like situation having a stated goal." Abstract)
- (c) providing a simulation of the actual work environment during the presentation (C1-14 especially "The present invention initially … mastering the subject and engaging it professionally." C3 L24-45; Also "A method for teaching the practical application of a subject. The student is furnished … a simulated life-like situation having a stated goal." Abstract);
- (d) evaluating progress toward the goal and providing feedback that further motivates accomplishment of the goal (C1-14 especially "The present invention initially … student is guided through these tasks accompanied by the watchful eye of the tutorial that monitors and anticipates the student's progress. … Should the student supply an erroneous answer, the tutorial will alert the student to the error and request that the student supply the correct information. … mastering the subject and engaging it professionally" C3 L24-45 or "The tutorial then evaluates the progress the student has made through the tutorial as a whole. … tutorial first inquires of the student whether or not any prior transactions, including the one just-completed, should be reviewed" C9 L20-35). *The feedback of requesting the student to correct errors motivates the student to correct the errors that have been made. Also inquiring of the student whether or not any transactions should be reviewed is feedback that motivates the student to consider the correctness and completeness of the work at hand, thereby further motivating the student to correct any noticed mistakes and complete any omitted transactions. Since the goal is for the student to correctly complete the tasks provided, this limitation is clearly met.*

Motivation

Purcell and ***Goleh*** are from the same field of endeavor, computer-based finance. At the time of the invention, it would have been obvious to the person of ordinary skill in the art to train managers and investors using the

machine-aided tutorial method of ***Goleh*** such that they understand how to use the spreadsheet analysis of ***Purcell*** to plan and manage economic investments and operations within a simulated life-like situation having a stated goal. Motivation for doing so would have been to provide "a life-like situation so that the student may gain hands-on experience…[and] so that the student can conveniently engage the tutorial method and so that the student's progress can be monitored by the computer…[and] to provide an interactive exercise that allows the student to independently assimilate the necessary guidelines required for performing the life-like situations presented to them" (***Goleh*** C3 L54-68). Therefore, it would have been obvious to train managers and investors, with a machine-aided tutorial method, to use spreadsheet analysis to plan and manage economic investments and operations within a simulated life-like situation having a stated goal, as taught by the combination of ***Purcell*** and ***Goleh***, for the benefit of allowing the student to independently assimilate the guidelines required for performing within provided life-like situation so the student may gain hands-on experience while the progress of the student is monitored by a computer.

The combination of ***Purcell*** and ***Goleh*** fails to explicitly teach:

- (c) wherein each component encapsulates a behavior and data necessary to support a related set of services through a published interface, each said component supporting activities in a plurality of development phases of the simulation that include a test phase,
    - a transformation component providing services for manipulating the state of the simulation, wherein the transformation component performs at least one calculation on the domain and provides a result back to the domain for further analysis by the profiling component;
    - the test phase including functional testing, usability testing, and cognition testing, the test phase being performed to test that the simulation:
        - functions properly as performed by the functional testing;
        - enables the student to navigate effectively as performed by the usability test; and
        - meets learning objectives as performed by the cognition testing.

Cook teaches,

- (a) receiving information indicative of a goal, the goal being associated with a training objective of a student, the training objective corresponding to mirroring an actual work environment of the student (C5-63 especially

"Therefore, an exemplary preferred ABI system includes one or more student client systems 201, at which student 202 receives instructional presentations including homework" C15 L35-45 or "The ABI system provides an environment in which … generate agent event messages." C31 L35-50 or "Student linking … including simply talking with each other by voice or text or for joint work on a particular material in which the students have either similar roles, as in developing a document using a word processor, or different roles, as in a simulation or game. Another activity of linked students includes group activities, in which position of participants within a virtual environment determines activity and role within activity. A final exemplary activity for linking student groups is moderated activity, in which participation is controlled by a special coordinating task that perhaps executes on a server system. An example of this latter activity is a spelling bee which is described in more detail subsequently." C46 L15-35 or "In an exemplary embodiment, this data subtype includes standard and criteria data, usually set by the school system, which include objectives and standards the student must meet in the particular course, milestone data establishing objectives already met by the student, data relating to the student's progress in the materials, data relating to the student's use of tools in the materials, and performance data" C49 L1-20 or "Progress data includes data … Performance data 1112 relates to student's performance over several lessons in the materials and can include mean performance, weighted moving averages of performance, patterns of performance, use of hints, use of retries, and needed remediation … to determine whether student performance is improving or declining" C49 L1-20 or "A further important object of this invention is to … present to students a variety of interactive, adaptive, and self-paced computer-assisted instruction and homework materials in a manner which informs the agent of a student's progress and performance and which permits the agent to manage or control the materials to the student's pedagogic characteristics. Thereby, the ABI system can effectively guide and engage students in their educational tasks" C6 L55-65 or "The materials engine can

adjust its sequence of presentation in response to student responses. … these patterns of interactions can be analyzed to provide more adaptive responses from the system." C11 L20-45; Also see Fig. 4); *It is clear that information indicative of a goal is associated with a student within the actual work environment of the student, such as a spelling bee or a specific learning assignment.*

- (b) integrating information that motivates accomplishment of the goal for use in a presentation (C5-63 especially "it accepts data…appropriate candidate behaviors" C5 L39-55 or "The on-screen agent instructs, motivates, engages and guides its student" C5 L55-C6 L10 or "in the case of a communication triggered by good performance, the agent can select the display of sound and video clips, from a data snips library, that the student finds pleasing. The agent can further make reward graphics available on the student's screen for a period of time" C14 L15-30 or "The affect further characterizes the intent of the utterance. For example, an utterance of a "congratulations" type … is important so that the virtual tutor aspect of the ABI system engage the student in order to improve instructional results" C58 L15-40 or "In the ABI system, the agent builds an adaptive model of its student's pedagogic characteristics, in other words the student's cognitive styles, by monitoring the course of the student's interactive instruction." C12 L20-25 or "Agent software 108 in the ABI system builds an adapting pedagogic or cognitive model of its student … preferably include the information from which this model is built. In general, event messages must include such content as is necessary to describe and parametrize the pedagogic or cognitive style models adopted by the materials in an implementation of the ABI system." C14 L55-63); *The student pedagogic model is concerned with how a student learns. The agent uses this model to determine what learning styles motivate the student such that the agent may maximize tutoring effectiveness.*
- (c) managing information flow utilizing a table of components to provide a simulation of the actual work environment during the presentation, wherein each component encapsulates a behavior and data necessary to support a related set of services through a published interface, each said component supporting activities

in a plurality of development phases of the simulation (C5-63 especially "FIG. 2A also shows an exemplary screen layout … preferably partitioned so that principal components of this invention are displayed; … Materials area 220 is for the instructional materials, tools, and communication materials to present visual display objects and for these components to receive interactive input. … The system area at top includes toolbar 218 for selecting particular available system components. In particular, always available on this toolbar are selection icons 219 for the calendar and scheduling tool. … This software provides, among other services, support for I/O devices attached to the client, a file system with cache control, lower level network protocols, such as TCP/IP and ATM, and higher-level network protocols, such as HTTP V2.0. Basic shared ABI system capabilities are provided by executive software 223. … Such downloading can utilize higher level network transfer protocols, or alternatively, directly use lower level network protocols." C16 L50-C17 L40 or "Instructional Materials: the components of a course of instruction … to the student." C9 L55-63 or "Tools Data: the content … Virtual Tutor: the ABI system components acting together to emulate a human tutor; … personal tutor" C10 L25-35 or "§5.1.1 Functional Components … from the system" C10 L41-C11 L42 or "This optional capability serves … the operating system components to maintain some form of version control of the read-only data. … access the ABI system services from any available client system at any time by simply downloading the student data object to that client system." C16 L15-30; *The table in Figure 2A allows a user access to various components of the invention through a published user interface. These components clearly encapsulate behaviors and data that are essential to providing associated services as disclosed in the above references and throughout the disclosure of the invention.*) the components comprising:

- a domain component providing services for modeling a state of the simulation (C5-63 especially i.e. "adaptive model of its student in student data object" C12L35-C13L10 or "Student Data Object" C48L15-65 or "Agent student model data 110 including items

modeling the student's persistent behavior" C48L40-65 or "status of each lesson presented by instructional materials is accumulated in current lesson data" C48L65-C49L52 or "state variables" C51L15-35);

- a profiling component providing a rule-based evaluation of the state of the simulation (C5-63 especially i.e. "judging student inputs" C32L45-C33L5 or "agent action processing … Rules in rules tables 610 are evaluated … rules propose candidate actions" C35L40-60 or "Rules … cause the update of the information in student data object … control information for the materials" C39L25-50 or "student data object also includes one or more data updating methods … triggering event type 1115 and action list 1116 … updating methods are searched to find one with a triggering event type which matches the event type of the update event" C49L50-C50L30 or "sequencing logic" C51L15-45 or "determines on-screen agent display actions in response to input events" C55L25-35 or "rules in an associated table of rules … select rules applicable" C55L45-C56L45);
- a transformation component providing services for manipulating the state of the simulation, wherein the transformation component performs at least one calculation on the domain and provides a result back to the domain for further analysis by the profiling component (C5-63 especially i.e. "sets global variables … updating the student data object" C35L40-60 or "transforms display actions into displays to the student" C55L25-35 or "updating student data object" C55L35-47 or "in the student data model, the current lesson subtype and materials specific data subtype are updated, if necessary, with data from the input event message. For example, upon item completion, performance results need to be updated" C55L45-C56 L45 or "Action weighting …" or C55L40-65 or "rule propagation and general production rule systems could be used to transform events to actions" C57L55-65); and
- a remediation component providing services for a rule-based delivery of feedback to the student, wherein the feedback is based on profiling information from the profiling component (C5-63 especially i.e. "remediation" C28L50-60 or "provide help, hints, and remediation … hints

offered by the agent in case of totally inappropriate actions ... selection of remediation paths … Appropriate feedback can be given" C32L25-C33L5 or "logic causes this display" C42L15-25 or "displays to the student" C55L25-35 or "rule propagation and general production rule systems could be used to transform events to actions" C57L55-65 or "rule propagation and full rule based systems can be used to transform events into actions" C63L25-35 or "rewards tailored to individual students" C63L35-60); and

- (d) Evaluating progress toward the goal (C5-63 especially "In an exemplary embodiment, this data subtype includes standard and criteria data, usually set by the school system, which include objectives and standards the student must meet in the particular course, milestone data establishing objectives already met by the student, data relating to the student's progress in the materials, data relating to the student's use of tools in the materials, and performance data" C49 L1-20) and providing feedback that further motivates accomplishment of the goal (C5-63 especially "in the case of a communication triggered by good performance, the agent can select the display of sound and video clips, from a data snips library, that the student finds pleasing. The agent can further make reward graphics available on the student's screen for a period of time. On the other hand, in the case of error the agent can point to the screen location of the error" C14 L15-30 or "in response to a previous high or increasing error rate of the student, the on-screen agent presents a meta-response 508 commenting on the pedagogic nature of the student's error. Further, it activates a persona 507 to engage the student's attention. This persona can advantageously include animation, audio, and speech output of the displayed text" C26 L35-65 or "A further important…student's pedagogic characteristics" C6 L55-65; Also see Figure 4);

Motivation

Cook and the combination of ***Purcell*** and ***Goleh*** are from the same field of endeavor, computer-based instruction. At the time of the invention, it would have been obvious to the person of ordinary skill in the art to use

the agent based instruction system of components with its pedagogic model as disclosed by ***Cook*** to improve upon the training of managers and investors, with a machine-aided tutorial method, to use spreadsheet analysis to plan and manage economic investments and operations within a simulated life-like situation having a stated goal as taught by the combination of ***Purcell*** and ***Goleh***. Motivation for doing so would have been to provide "to utilize augmented computer-assisted instruction materials which present to students a variety of interactive, adaptive, and self-paced computer-assisted instruction and homework materials in a manner which informs the agent of a student's progress and performance and which permits the agent to manage or control the materials to the student's pedagogic characteristics. Thereby, the ABI system can effectively guide and engage students in their educational tasks" (***Cook*** C6 L57-65) because "It is clear to those of skill in the art that by providing interactive, adaptive, and self-paced computer-assisted instruction and homework delivered over widely available computer networks this invention has immediate application in public, private, and commercial school environment of all levels. Educational research shows that instruction and homework of these characteristics improves students' educational outcomes" (***Cook*** C8 L5-12) and "for interactive, adaptive, and individualized computer-assisted instruction" (***Cook*** Abstract, sentence 1) and for such instruction to be "available to geographically dispersed students and from geographically dispersed schools" (***Cook*** C6 L35-56). Therefore, it would have been obvious to combine ***Cook*** with the combination of ***Purcell*** and ***Goleh*** to get an interactive, adaptive, self-paced computer-assisted instruction and homework system delivered over widely computer networks to allow managers and investors to learn, in the individualized instruction style best suited to them, to use the spreadsheet analysis to plan and manage economic investments and operations within a simulated life-like situation having a stated goal for the benefit of individualized instruction available to geographically dispersed students from geographically dispersed training centers.

The combination of ***Purcell***, ***Goleh***, and ***Cook*** fails to explicitly teach:

- (c) wherein the development phases of the simulation that include a test phase, the test phase including functional testing, usability testing, and cognition testing, the test phase being performed to test that the simulation:

- functions properly as performed by the functional testing;
- enables the student to navigate effectively as performed by the usability test; and
- meets learning objectives as performed by the cognition testing.

Mehlenbacher teaches:

- (c) wherein the development phases of the simulation that include a test phase, the test phase including usability testing (p209-222 especially "`Usability Test`" p211 and throughout; *There is abundant literature discussing software development processes which makes it abundantly clear that it is well known in the art at the time the invention was made for software development to include phases including, but not limited to: planning, specifying/gathering requirements, analyzing requirements, defining functions, defining functions, prototyping, designing, building/coding, testing, user-testing, beta testing, producing a product, customer delivery acceptance, installation, training users, operation/execution, customization, evolution, and post-production fixes.*).

Rationale:

Mehlenbacher and the combination of ***Purcell***, ***Goleh***, and ***Cook*** are from the same field of endeavor, computer software. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined teachings of ***Purcell***, ***Goleh***, and ***Cook*** by including a test phase in using usability testing as taught by ***Mehlenbacher*** for the benefit of achieving the common goal of creating systems that are usable, esthetically motivating, functionally approachable, and easy to use (***Mehlenbacher*** p209 col 2).

The combination of ***Purcell***, ***Goleh***, ***Cook***, and ***Mehlenbacher*** fails to explicitly teach:

- (c) wherein the test phase includes functional testing and cognition testing, the test phase being performed to test that the simulation:
  - functions properly as performed by the functional testing;
  - enables the student to navigate effectively as performed by the usability test; and
  - meets learning objectives as performed by the cognition testing.

Tripp teaches:

- (c) wherein the development phases of the simulation that include a test phase, the test phase including usability testing (p31-43 especially "`communication problems such as human-machine interaction`" p38-39 or "`Utilization is the situated action in which the learner`

develops cognitive skills and learns content … must be adapted to a unique situation" p37), and cognition testing (p31-43 especially "Utilization is the situated action in which the learner develops cognitive skills and learns content … must be adapted to a unique situation" p37-38 or "communication problems such as … cognitive processing" p38), the test phase being performed to test that the simulation:

- meets learning objectives as performed by the cognition testing (p31-43 especially i.e. "learner develops cognitive skills and learns content … designer observes the learner and asks questions to discover strengths and weaknesses of the prototype" p37-38; *The person of ordinary skill in the art at the time the invention was made would have understood that "discovering the strengths and weaknesses" encompasses determining if the learner develops the intended cognitive skills and learns the objective content*).

Rationale:

Tripp and the combination of ***Purcell***, ***Goleh***, ***Cook***, and ***Mehlenbacher*** are from the same field of endeavor, computer software. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined teachings of ***Purcell***, ***Goleh***, ***Cook***, and ***Mehlenbacher*** by including a test phase in which the designer can observe the learner develop cognitive skills and learn content while using the presentation as taught by ***Tripp*** for the benefit of discovering the strengths and weaknesses of the presentation and discovering new problems that result in the modification of the presentation to satisfy goals (***Tripp*** p37 col 2 and p42 col 1).

The combination of ***Purcell***, ***Goleh***, ***Cook***, ***Mehlenbacher***, and ***Tripp*** fails to explicitly teach:

- (c) wherein the test phase includes functional testing, the test phase being performed to test that the simulation:
  - functions properly as performed by the functional testing; and
  - enables the student to navigate effectively as performed by the usability test.

Fairley teaches:

- (c) wherein the development phases of the simulation that include a test phase, the test phase including functional testing (i.e. especially "Functional tests" p137-139 or "functional tests" p184-185 or "function tests" p269-272 or "Functional tests" p283-288), the test phase being performed to test that the simulation:

- functions properly as performed by the functional testing (i.e. especially "Functional tests and performance tests are based on the requirements specifications; they are designed to demonstrate that the system satisfies its requirements" p184 or "demonstrate that the system satisfies its requirements … Functional test cases specify typical operating conditions, typical input values, and typical expected results … functional boundaries" p271).

Rationale:

Fairley and the combination of ***Purcell***, ***Goleh***, ***Cook***, ***Mehlenbacher***, and ***Tripp*** are from the same field of endeavor, computer software. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined teachings of ***Purcell***, ***Goleh***, ***Cook***, ***Mehlenbacher***, and ***Tripp*** by including a test phase including functional testing as taught by ***Fairley*** for the benefit of using one of the four types of test that a software product must satisfy and demonstrating that the system satisfies its requirements (***Fairley*** p184).

The combination of ***Purcell***, ***Goleh***, ***Cook***, ***Mehlenbacher***, ***Tripp***, and ***Fairley*** fails to explicitly teach:

- (c) the test phase being performed to test that the simulation:
  - enables the student to navigate effectively as performed by the usability test.

Turner teaches:

- (c) wherein the development phases of the simulation that include a test phase, the test phase including usability testing (pages 1-79 especially i.e. "usability testing" p2-3 or "usability testing" p27-28 or "usability testing" p78), the test phase being performed to test that the simulation:
  - enables the student to navigate effectively as performed by the usability test (pages 1-79 especially i.e. "usability testing will identify … strengths and weaknesses … navigation … Student tasks should be enhanced through clear, routine navigation" p2-3 or "effective navigation? … usability testing … strengths and weaknesses … navigation … usability" p78).

Rationale:

Turner and the combination of ***Purcell***, ***Goleh***, ***Cook***, ***Mehlenbacher***, ***Tripp***, and ***Fairley*** are from the same field of endeavor, computer software. It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combined teachings of ***Purcell***, ***Goleh***, ***Cook***, ***Mehlenbacher***, ***Tripp***, and ***Fairley*** by

performing usability testing to ensure that the student can navigate effectively as taught by ***Turner*** for the benefit of remedying serious interface problems that surface prior to system implementation (***Turner*** p2), revealing strengths and weaknesses in the interface design (***Turner*** p3), ensuring a user-friendly interface with simplistic navigation indicative of good design (***Turner*** p77), and solving usability issues prior to implementation of the system (***Turner*** p78).

Claims 2 and 11:

Cook discloses:

the step of instantiating a component from the table of components to measure progress toward the goal (C5-63 especially "data subtype includes … objectives and standards the student must meet in the particular course, milestone data establishing objectives already met by the student, data relating to the student's progress in the materials, data relating to the student's use of tools in the materials, and performance data. Progress data includes data necessary for the student to leave the materials and resume the materials at the prior point" C49 L1-17 or "Teachers and administrators … even one student" C11 L43-50 or "In the case of shared work on one materials, communications materials can generate events recording how this student in progressing with the shared materials; in the case of a contest such as a spelling bee, events recording how this student is progressing in the contest with respect to other contestants. In addition, in a preferred embodiment agent software 108 also receives messages describing the progress of the student through specific instructional materials. For example, in the case of mathematics materials, such messages can include information that the student is making errors in problems requiring finding common denominators. These event message should preferably all information that can be of interest to teachers and administrators for tracking student progress and tracking course adequacy" C14 L1-16). ***Cook*** *clearly instantiates data types to measure the progress of the student within the materials.*

Claims 2 and 11:

Goleh discloses:

the step of instantiating a component from the table of components to measure progress toward the goal (C1-14 especially "The present invention initially provides the accounting student with a progression of instructional and/or informative screens that set forth the knowledge required to accomplish the real-like tasks that will be required of the student. Through a menu-based system, the student is guided through these tasks accompanied by the watchful eye of the tutorial that monitors and anticipates the student's progress. As the student progresses through the tutorial, information that is necessary to the student's successful completion of the task at hand may be presented in the appropriate context most conductive to the student's best learning of the immediate subject" C3 L24-40 or "The tutorial then evaluates the progress the student has made through the tutorial as a whole" C9 L20-25).

Claims 4 and 13:

Cook discloses:

instantiating a component from the table of components to analyze progress and determine appropriate feedback (C5-63 especially "objectives and standards the student must meet in the particular course, milestone data establishing objectives already met by the student, data relating to the student's progress in the materials, data relating to the student's use of tools in the materials, and performance data. Progress data includes data necessary for the student to leave the materials and resume the materials at the prior point" C49 L1-17 or "In the case of shared work on one materials, communications materials can generate events recording how this student in progressing with the shared materials; in the case of a contest such as a spelling bee, events recording how this student is progressing in the contest with respect to other contestants. In addition, in a preferred embodiment agent software 108 also receives messages describing the progress of the student through specific instructional materials. For example, in the case of mathematics materials, such messages can include

information that the student is making errors in problems requiring finding common denominators. These event message should preferably all information that can be of interest to teachers and administrators for tracking student progress and tracking course adequacy" C14 L1-16 or "These named display … to generate displays" C60 L15-30 or "in the case of a communication triggered by good performance, the agent can select the display of sound and video clips, from a data snips library, that the student finds pleasing. The agent can further make reward graphics available on the student's screen for a period of time. On the other hand, in the case of error the agent can point to the screen location of the error" C14 L15-30 or "in response to a previous high or increasing error rate of the student, the on-screen agent presents a meta-response 508 commenting on the pedagogic nature of the student's error. Further, it activates a persona 507 to engage the student's attention. This persona can advantageously include animation, audio, and speech output of the displayed text" C26 L35-65; Also see Figure 4).

Claims 4 and 13:

Goleh discloses:

instantiating a component from the table of components to analyze progress and determine appropriate feedback (C1-14 especially "The present invention initially provides the accounting student with a progression of instructional and/or informative screens that set forth the knowledge required to accomplish the real-like tasks that will be required of the student. Through a menu-based system, the student is guided through these tasks accompanied by the watchful eye of the tutorial that monitors and anticipates the student's progress. As the student progresses through the tutorial, information that is necessary to the student's successful completion of the task at hand may be presented in the appropriate context most conductive to the student's best learning of the immediate subject" C3 L24-40).

Claims 5 and 14:

Cook discloses:

the step of instantiating a component from the table of components to evaluate options and present appropriate feedback to assist a student to achieve the goal (C5-63 especially "the ABI system … of task scheduling" C29 L14-30 or "These named display … to generate displays" C60 L19-30)

Claims 6 and 15:

Cook discloses:

instantiating a component from the table of components to simulate a business application (C5-63 especially "An object of this invention is reporting of … in existing computer-assisted instruction systems" C7 L42-50 or Table 3 in C52 L55-65 or "These named display … to generate displays" C60 L19-30).

Claims 6 and 15:

Goleh discloses:

instantiating a component from the table of components to simulate a business application (C1-14 especially "Upon correctly preparing the post-closing trial balance, the tutorial programs has been completed by the student 314. The student has completed a life-like tutorial using tools and materials similar to that of a real-life accountant in a real-life situation. The different tasks performed by the student are available for review" C12 L59-65 or "In one embodiment of the accounting tutorial embodiment, sixty-three (63) different transactions are subject to correct student interpretation and responses. These sixty-three transactions represent the entirety of transactions for one accounting period (one month) for a fictional auto parts supply shop. Once the student has correctly entered all sixty-three transactions into the books of the auto supply shop, the tutorial recognizes at step 256 in FIG. 2c that the transactions are at an end and that the month-end accounting procedure now needs to

be engaged. Other accounting tutorial embodiments can present transaction for other forms of businesses like services, manufacturing, etc" C10 L5-17).

Claims 6 and 15:

Purcell discloses:

instantiating a component from the table of components to simulate a business application (C1-45 especially "Compared to conventional formats of quantitative information on business-financial plan, such as ubiquitous spreadsheet tables, each of the invention's graphic analyses represents development and delivery of a vast amount of planning and decision-making information and value in concise visual format" C33 L10-17 or "With a very wide range of business-financial users, most of which are not mathematical experts, this spreadsheet characteristic facilitates wider business-financial use" C12 L25-30; Also see Figures 1-54).

Claims 7 and 16:

Purcell discloses:

instantiating a component from the table of components to interact with a quantitative analysis model to perform what-if analysis (C1-45 especially "In a first integrated or subcombination process, steps 610-612 are performed. From these steps, the computer system 100 through user selection of a goal and one or more factors develops and displays graphic analyses showing goal-factor relationships and panoramas of combinations of factor variant data and goal variant data across ranges above and below values contained in the spreadsheet plan-model, representing a great number of what-if possibilities. A second integrated process or subcombination adds the step 613 to steps 610-612. Specifically, after the created graphic analysis with graph lines is displayed, interactive explorations of what-if possibilities are conducted" C13 L49-62; Also "Selected graphic analyses can be saved in a method and customized user interface

that simplify later redevelopment of the graphic analyses ready for further interactive moves to what-if possibilities" Abstract, last sentence).

Claims 8 and 17:

Cook discloses:

instantiating a component from the table of components to interact with a student utilizing rule-based logic (C5-63 especially "The materials data includes display objects containing the substance of the instruction, logic to sequence the display according to student input, and notations" C7 L1-5 and "The second step is the selection of the sequencing logic for the ordered display of the objects to the student and the educationally appropriate reaction to student requests and responses. The sequencing logic can reference instructional controls set by agent software 108, such as a command to increase example density, and preferably is chosen in light of principles of educational psychology and practice as detailed above. The third step is the specification of interactions with a student's agent or virtual tutor, a key component of the ABI system. This specification is made by augmenting the sequencing logic with "notations," which are referenced, called, or executed by the sequencing logic during object presentation and that communicate with the agent, in a preferred embodiment by exchanging messages. In the ABI system, the agent builds an adaptive model of its student's pedagogic characteristics, in other words the student's cognitive styles, by monitoring the course of the student's interactive instruction" C12 L5-25 or "These named display … to generate displays" C60 L19-30 or "The sequencing logic causes this display in view of the variables and other information in the materials data and any student input" C42 L15-20).

Claims 9 and 18:

Cook discloses:

instantiating a component from the table of components to present a time based simulation (C5-63 especially and "The following general principles … the system preferably provides task specific hints or suggestions if no user input is received in a time period adaptively determined. … current context" C28 L12-25 or "The corresponding event message can include … the expected time to complete … In response, the materials can generate several messages: a first message can include the time required to make the answer … Another educationally significant point can be a long delay in receiving the next student input, at which point the materials engine can send an asynchronous message indicating the time elapsed" C13 L45-65 or "Exemplary coaching parameters include the time pacing of exercises, the new concept seeding rate and the density of examples. In this manner, the materials can present interactive instruction according to optimal values of the pedagogic characteristics or cognitive styles of each student as determined from the agent's observation of its student" C13 L1-10 or "The scheduling/calendar tool … Selection of each of these parts brings up daily and monthly scheduling functions. These function can either prescribe the student's next activity or permit choice where the student has excess time or demonstrated personal scheduling ability" C25 L50-60 or "Displays from the ABI System … time increases downward. … at the arrow's head" C27 L50-60 or "Schedule/calendar component … the time expected for the student to complete an activity, as determined from the student's past performance also stored … schedule/calendar can permit OS task creation requested by the student … and student data object" C34 L40-65 or "Having completed all possible processing of the student input action, the system now waits at wait point 717 for the next student action or time interval" C39 L64-67 or "The spelling bee activity can be scheduled for … or selected by the student. … No response within a specified amount of time is taken as indicating a desire not to join. … If enough eligible students join the spelling bee, the server task continues, otherwise it sends a termination message … and reports results" C47 L35-67 or "Materials specific performance includes, for example, weighted moving averages of

data on the student's response time and response latency" C63 L3-8; Also see Table 3 in C52 L55-65). *The prior art referenced contains clear examples of this limitation on multiple levels of reasonable interpretation. One example is the schedule/calendar, which is the overarching time based simulation of scheduled activities. The activities themselves are also time-based simulations, since the student responses may be timed and a visible timer is disclosed for keeping the student aware of the remaining time for acting on the material presented.*

Response to Arguments

Applicant's arguments filed 3/19/2008 have been fully considered but they are not persuasive. In re pages 6-9, Applicant argues that:

> "Purcell fails to discuss a relationship among the domain component, profiling component, transformation component, and remediation component and consequently does not even suggest the features of "a **transformation component** providing services for manipulating the state of the simulation, wherein the transformation component performs at least one calculation on the **domain** and provides a result back to the **domain** for further analysis by the **profiling component**" and "**a remediation component** providing services for a rule-based delivery of feedback to the student, wherein the feedback is based on profiling information from **the profiling component**" as contained in claim 1. (Emphasis added [by Applicant].) Moreover, Cook, Goleh, Mehlenbacher, Tripp, Fairley, and Turner fail to remedy the deficiencies of Purcell."

Examiner disagrees. Although ***Purcell*** does not explicitly teach the claimed transformation component (as amended), the rejection above clearly shows that ***Purcell*** teaches a remediation component delivering feedback (graphs) based on domain information (models) from the profiling component (which analyzes the models). Specifically, ***Purcell*** teaches:

- **a remediation component providing services for a rule-based delivery of feedback to the student, wherein the feedback is based on profiling information from the profiling component** (C1-45 especially i.e. "each of the invention's graphic analyses represents development and delivery of a vast amount of planning and decision-making information and value in concise visual format" C33L5-30 or "providing a first graph … display said first graph" Claim 1 or "the sentence changes to state the information represented by the moved-to position" C35L55-C36L5; *The person of ordinary skill in the art at the time the invention was made would have understood that this requires monitoring the state of the graph point in order to use programming logic/rules to evaluate the state in order to determine the appropriate information to display to the user*).

Furthermore, ***Cook*** teaches the claimed relation between domain component, profiling component, transformation component, and remediation component as detailed in the rejection above. Specifically, ***Cook*** teaches:

- **a transformation component providing services for manipulating the state of the simulation, wherein the transformation component performs at least one calculation on the domain and provides a result back to the domain for further analysis by the profiling component** (C5-63 especially i.e. "sets global variables … updating the student data object" C35L40-60 or "transforms display actions into displays to the student" C55L25-35 or "updating student data object" C55L35-47 or "in the student data model, the current lesson subtype and materials specific data subtype are updated, if

necessary, with data from the input event message. For example, upon item completion, performance results need to be updated" C55L45-C56 L45 or "Action weighting …" or C55L40-65 or "rule propagation and general production rule systems could be used to transform events to actions" C57L55-65); and

- **a remediation component providing services for a rule-based delivery of feedback to the student, wherein the feedback is based on profiling information from the profiling component** (C5-63 especially i.e. "remediation" C28L50-60 or "provide help, hints, and remediation … hints offered by the agent in case of totally inappropriate actions ... selection of remediation paths … Appropriate feedback can be given" C32L25-C33L5 or "logic causes this display" C42L15-25 or "displays to the student" C55L25-35 or "rule propagation and general production rule systems could be used to transform events to actions" C57L55-65 or "rule propagation and full rule based systems can be used to transform events into actions" C63L25-35 or "rewards tailored to individual students" C63L35-60).

In re pages 9-10, Applicant argues that independent claim 10 includes similar features and that claims 2, 4-9, 11, and 13-18 depend from independent claims 1 and 10. As detailed above, the art of record covers every claimed limitation. All arguments presented by Applicant have been addressed. This rejection STANDS.

Claim Rejections - 35 USC § 103

Claims 3 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over ***Purcell*** (USPN 5,727,161), ***Goleh*** (USPN 5,372,507), ***Cook*** (USPN 5,727,950), ***Mehlenbacher*** ("Software Usability: Choosing Appropriate Methods for Evaluating Online Systems and Documentation"), ***Tripp*** ("Rapid Prototyping: An Alternative Instructional Design Strategy"), ***Fairley*** ("Software Engineering Concepts"), and ***Turner*** ("A Case Study Using Scenario-Based Design Tools and Techniques in the Formative Evaluation Stage of Instructional Design: Prototype Evaluation and Redesign of a Web-Enhanced Course Interface") in view of ***Clancey*** (USPN 4,847,784).

Claims 3 and 12:

The combination of ***Purcell***, ***Goleh***, ***Cook***, ***Mehlenbacher***, ***Tripp***, ***Fairley***, and ***Turner*** fails to explicitly teach:

- the step of instantiating a component from the table of components to interrupt and interview a student to obtain information to measure progress toward the goal and determine appropriate feedback.

Clancey discloses:

- the step of instantiating a component from the table of components to interrupt and interview a student to obtain information to measure progress toward the goal and determine appropriate feedback (C1-18 especially "When any of the interrupt conditions 30 occur during the test consultation, the test consultation is interrupted and the evaluation system 34

is operated to prompt the student 27 for information pertaining to the condition having caused the interrupt. … After probing the student 27 for a response, the response is compared to the knowledge in the knowledge base 22 pertaining to the interrupt condition in order to evaluate the student's knowledge and performance. As shown in FIG. 2, the result of the comparison is recorded as a record 46 of the student's knowledge and performance" C9 L60-C10 L16 or "The instruction is therefore easily tailored to the subject domain and the needs of the student by appropriately selecting the trap expressions and the test cases. The trap expressions and the test cases are, for example, stored in a case library, and the cases could be ranked, for example, in order of increasing difficulty and student experience level" C15 L40-50).

Rationale:

Clancey and the combination of ***Purcell***, ***Goleh***, ***Cook***, ***Mehlenbacher***, ***Tripp***, ***Fairley***, and ***Turner*** are from the same field of endeavor, computer-based instruction. At the time of the invention, it would have been obvious to the person of ordinary skill in the art to add the interruption and interviewing taught by ***Clancey*** to evaluate the progress of the student and provide appropriate feedback in the interactive, adaptive, self-paced computer-assisted instruction and homework system delivered over widely computer networks to allow managers and investors to learn, in the individualized instruction style best suited to them, to use the spreadsheet analysis to plan and manage economic investments and operations within a simulated life-like situation having a stated goal as taught by the combination of ***Purcell***, ***Goleh***, ***Cook***, ***Mehlenbacher***, ***Tripp***, ***Fairley***, and ***Turner***. Motivation for doing so would have been "to provide a practical domain-independent tutor shell accepting the knowledge base of a consultation system and providing instruction tailored to the subject domain and the needs of the student … which easily accepts domain-dependent tutoring knowledge from a user … [and] to provide a knowledge based tutor capable of extending its own knowledge base" (***Clancey*** C6 L1-30) in "a practical domain-independent tutor shell accepting the knowledge base of a consultation system and providing instruction tailored to the subject domain and the needs of the student. For easily accepting domain-dependent tutoring knowledge from a user, the domain knowledge base is analyzed for possible interrupt

conditions or traps which may occur during a test consultation … Moreover, the computer execution time during a consultation interrupt is substantially decreased by compiling and indexing portions of the domain knowledge base which relate to the interrupt conditions" (***Clancey*** C15 L30-60). Therefore, it would have been obvious to combine ***Clancey*** with the combination of ***Purcell***, ***Goleh***, and ***Cook*** to get an interactive, adaptive, self-paced computer-assisted instruction and homework system, capable of interrupting and interviewing the learner to evaluate progress and provide appropriate feedback, delivered over widely computer networks allowing managers and investors to learn, in the individualized instruction style best suited to them, to use the spreadsheet analysis to plan and manage economic investments and operations within a simulated life-like situation having a stated goal for the benefit of providing instruction tailored to the subject domain and the needs of the student while decreasing the computer execution time during a consultation interrupt by compiling and indexing portions of the domain knowledge base which relate to the interrupt conditions.

Response to Arguments

Applicant's arguments filed 3/19/2008 have been fully considered but they are not persuasive. In re page 10, Applicant argues that claims 3 & 12 depend on independent claims 1 & 10 and are patentable for at least the reasons presented for those claims.

Examiner disagrees. As those claims stand rejected, this argument is not persuasive. This rejection properly STANDS.

Conclusion

Applicant's amendment necessitated any new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be

calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Claims 1-18 are rejected.

Correspondence Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to BENJAMIN BUSS whose telephone number is (571)272-5831. The examiner can normally be reached on M-F 9AM-5PM.

As detailed in MPEP 502.03, communications via Internet e-mail are at the discretion of the applicant. Without a written authorization by applicant in place, the USPTO will not respond via Internet e-mail to any Internet correspondence which contains information subject to the confidentiality requirement as set forth in 35 U.S.C. 122. A paper copy of such correspondence will be placed in the appropriate patent application. The following is a sample authorization form which may be used by applicant:

> "Recognizing that Internet communications are not secure, I hereby authorize the USPTO to communicate with me concerning any subject matter of this application by electronic mail. I understand that a copy of these communications will be made of record in the application file."

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Vincent can be reached on 571-272-3080. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Benjamin Buss
Examiner
Art Unit 2129

/B. B./
Examiner, Art Unit 2129
/David R Vincent/
Supervisory Patent Examiner, Art Unit 2129